

3.4 day 2 worksheet

Date _____ Period _____

Solve each inequality. Please make sure to **SHOW ALL YOUR WORK!!!**

1) $1 - 6x < -1 - 3x - 4x$

- A) $x < -39$ B) $x > -39$
 C) $x > -35$ D) $x < -2$

$$\begin{array}{r} 1 - 6x < -1 - 7x \\ +6x \quad +6x \\ \hline 1 < -1 - x \\ +1 \quad +1 \\ \hline 2 < -x \\ \text{Flip it!} \\ -2 > x \end{array}$$

2) $x - 6 < -x - 14$

- A) $x < -4$ B) $x > -25$
 C) $x < -25$ D) $x < -13$

$$\begin{array}{r} x - 6 < -x - 14 \\ +x \quad +x \\ \hline 2x - 6 < -14 \\ +6 \quad +6 \\ \hline 2x < -8 \\ \hline x < -4 \end{array}$$

3) $-7b + 6 < 1 - 8b$

- A) $b < -30$ B) $b < -11$
 C) $b < -39$ D) $b < -5$

$$\begin{array}{r} -7b + 6 < 1 - 8b \\ +8b \quad +8b \\ \hline 1b + 6 < 1 \\ -6 \quad -6 \\ \hline b < -5 \end{array}$$

4) $2a + 7a < -6 + 7a$

- A) $a > -3$ B) $a < -3$
 C) $a < 2$ D) $a > 2$

$$\begin{array}{r} 2a + 7a < -6 + 7a \\ 9a < -6 + 7a \\ -7a \quad -7a \\ \hline 2a < -6 \\ \hline a < -3 \end{array}$$

5) $5 + 5x \leq 1 + 4x$

- A) $x \leq -24$ B) $x \leq -4$
 C) $x \leq -32$ D) $x \leq 0$

$$\begin{array}{r} 5 + 5x \leq 1 + 4x \\ -4x \quad -4x \\ \hline 5 + x \leq 1 \\ -5 \quad -5 \\ \hline x \leq -4 \end{array}$$

6) $-n - n > n - 7 - 4 - 4$

- A) $n < -8$ B) $n < 5$
 C) $n < 1$ D) $n < -15$

$$\begin{array}{r} -n - n > n - 7 - 4 - 4 \\ -2n > n - 15 \\ +2n \quad +2n \\ \hline 0 > 3n - 15 \\ +15 \quad +15 \\ \hline 15 > 3n \\ \hline 5 > n \end{array}$$

$n < 5$

7) $-6x - 6 > -5x - 14$

- A) $x > -16$ B) $x < -16$
 C) $x < -9$ D) $x < 8$

$$\begin{array}{r} -6x - 6 > -5x - 14 \\ +6x \quad +6x \\ \hline -6 > x - 14 \\ +14 \quad +14 \\ \hline 8 > x \end{array}$$

$x < 8$

8) $-1 - 7k \leq -15 + 1 - 8k + 5$

- A) $k \leq -5$ B) $k \geq -5$
 C) $k \geq -8$ D) $k \leq -8$

$$\begin{array}{r} -1 - 7k \leq -15 + 1 - 8k + 5 \\ -1 - 7k \leq -9 - 8k \\ +8k \quad +8k \\ \hline -1 + k \leq -9 \\ +1 \quad +1 \\ \hline k \leq -8 \end{array}$$

9) $-26 + 5r < 6(1 + 6r) + r$

- A) $r > -1$
C) $r > -8$

- B) $r < -16$
D) $r > -16$

$$\begin{aligned} -26 + 5r &< 6 + 36r + r \\ -26 + 5r &< 6 + 37r \\ -5r &\quad -5r \\ \hline -26 &< 6 + 32r \\ -6 &\quad -6 \\ \hline -32 &< 32r \\ \frac{-32}{32} &\quad \frac{32r}{32} \\ -1 &< r \end{aligned}$$

$r > -1$

11) $30 - 5x \leq -5(-1 + 2x)$

- A) $x \geq -23$
C) $x \geq -5$

- B) $x \geq 1$
D) $x \leq -5$

$$\begin{aligned} 30 - 5x &\leq -5(-1 + 2x) \\ 30 - 5x &\leq 5 - 10x \\ +10x &\quad +10x \\ \hline 30 + 5x &\leq 5 \\ -30 &\quad -30 \\ \hline 5x &\leq -25 \\ \frac{5x}{5} &\quad \frac{-25}{5} \\ x &\leq -5 \end{aligned}$$

13) $5p - 26 < 3(6p - 4) - 1$

- A) $p < -1$
C) $p < -6$

- B) $p < 5$
D) $p > -1$

$$\begin{aligned} 5p - 26 &< 3(6p - 4) - 1 \\ 5p - 26 &< 18p - 12 - 1 \\ 5p - 26 &< 18p - 13 \\ -5p &\quad -5p \\ \hline -26 &< 13p - 13 \\ +13 &\quad +13 \\ \hline -13 &< 13p \\ \frac{-13}{13} &\quad \frac{13p}{13} \\ -1 &< p \end{aligned}$$

$p > -1$

15) $-7(8 - 2n) \geq 7(6 - 5n)$

- A) $n \leq 2$
C) $n \leq -36$

- B) $n \geq 2$
D) $n \leq -13$

$$\begin{aligned} -7(8 - 2n) &\geq 7(6 - 5n) \\ -56 + 14n &\geq 42 - 35n \\ +35n &\quad +35n \\ \hline -56 + 49n &\geq 42 \\ +56 &\quad +56 \\ \hline 49n &\geq 98 \\ \frac{49n}{49} &\quad \frac{98}{49} \\ n &\geq 2 \end{aligned}$$

10) $-4(1 + 3x) < 28 + 4x$

- A) $x < -10$
C) $x < -13$

- B) $x > -2$
D) $x < -2$

$$\begin{aligned} -4(1 + 3x) &< 28 + 4x \\ -4 - 12x &< 28 + 4x \\ +12x &\quad +12x \\ \hline -4 &< 28 + 16x \\ -28 &\quad -28 \\ \hline -32 &< 16x \\ \frac{-32}{16} &\quad \frac{16x}{16} \\ -2 &< x \end{aligned}$$

$x > -2$

12) $-5(2x + 3) > -5x + 15$

- A) $x < -6$
C) $x < -17$

- B) $x > -6$
D) $x > -17$

$$\begin{aligned} -5(2x + 3) &> -5x + 15 \\ -10x - 15 &> -5x + 15 \\ +10x &\quad +10x \\ \hline -15 &> 5x + 15 \\ -15 &\quad -15 \\ \hline -30 &> 5x \\ \frac{-30}{5} &\quad \frac{5x}{5} \\ -6 &> x \end{aligned}$$

$x < -6$

14) $-(5x - 5) > 11 - 6x$

- A) $x > 6$
C) $x < -29$

- B) $x < 6$
D) $x > -29$

$$\begin{aligned} -(5x - 5) &> 11 - 6x \\ -1(5x - 5) &> 11 - 6x \\ -5x + 5 &> 11 - 6x \\ +6x &\quad +6x \\ \hline x + 5 &> 11 \\ -5 &\quad -5 \\ \hline x &> 6 \end{aligned}$$

16) $-2k + 7k \leq -5(-4 + 4k) + 5(1 + 6k)$

- A) $k \leq -5$
C) $k \leq -3$

- B) $k \leq -14$
D) $k \geq -5$

$$\begin{aligned} -2k + 7k &\leq -5(-4 + 4k) + 5(1 + 6k) \\ 5k &\leq 20 - 20k + 5 + 30k \\ 5k &\leq 25 + 10k \\ -5k &\quad -5k \\ \hline 0 &\leq 25 + 5k \\ -25 &\quad -25 \\ \hline -25 &\leq 5k \\ \frac{-25}{5} &\quad \frac{5k}{5} \\ -5 &\leq k \\ k &\geq -5 \end{aligned}$$